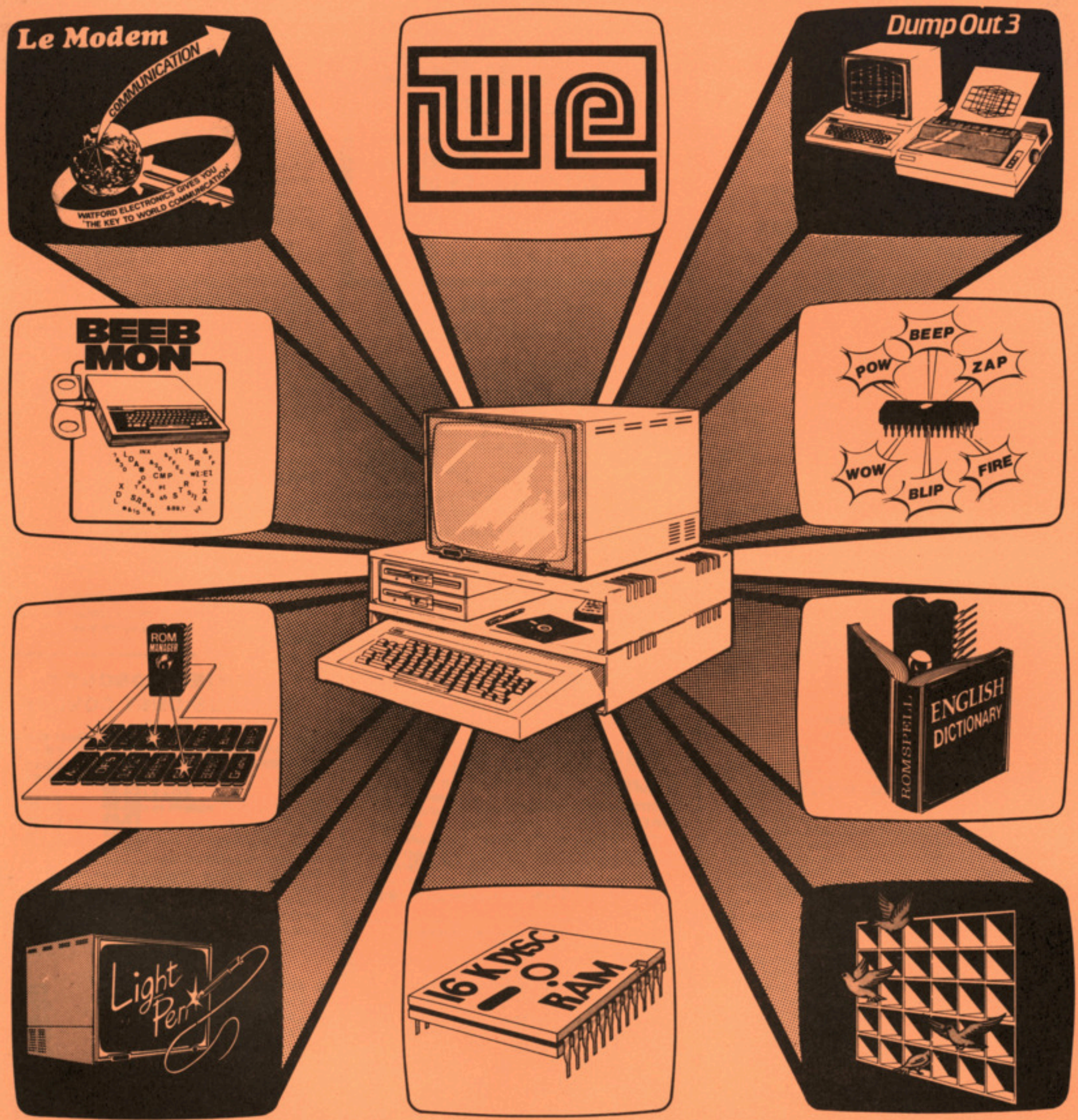
MICRO CATALOGUE AUGUST '85



Watford Electronics

250, High Street, Watford, WD1 2AN. England Tel. (0923) 37774 Tlx. 8956095

Watford Electronics

Dept. BBC, Jessa House, 250, Lower High Street, WATFORD, ENGLAND
Tel: Watford (0923) 37774/40588 Telex: 8956095 WATFRD
ORDERS BY ACCESS OR VISA Tel: (0923) 50234

BBC Micro 'B' Only: £289

Price includes FREE 5 games software packages

BBC MICRO 32K + 32K

(extra 32K RAM Card already fitted)

Only: **£348**

BBC B PLUS	**£399**
BBC B with Watford DFS	**£339**
BBC B with Acorn DFS	**£335**
BBC B with Watford DDFS	**£355**
BBC B with ECONET	**£335**
BBC B + DFS + ECONET	**£395**
BBC B + DFS + 32K RAM Card	**£397**
BBC B + 13 ROM Board fitted	**£322**
BBC B + 32K RAM + 13 ROM Board	**£379**
BBC B + DFS + 32K RAM + 13 ROM Board all fitted	**£429**

Complete BBC B ECONET Networking System now available.

(P.S. ROM based software purchased with any of the above Micros will be fitted free of charge).

6502 Acorn 2nd Processor	**£175**
Z80 Acorn 2nd Processor	**£339**
TORCH Z80 Card + Perfect Software	**£275**
TORCH Z80 Card+Soft. + Disc Pack	**£550**
TORCH GRADUATE Z80 System	**£900**
Acorn Bitstick	**£325**
Acorn IEEE Interface Complete	**£280**
Acorn Teletext + Interface	**£195**

(Securicor carriage on Micros £7)

Dust Cover for BBC Micro

£3.50

NEW

SEIKOSHA SP-800

This new attractively finished dot matrix printer features Near Letter Quality mode and is unsurpassed at the price. Provides high quality printout for word-processing, whilst retaining a fast mode (80 CPS) for draft copies. Other features include a variety of character sets, underlining, bold print and double strike, bi-directional logic seek, automatic paper loading, variable paper width etc. Friction Feed; Tractor feed optional extra. SP800 makes available the facilities of much more sophisticated printers at a very reasonable price.

Introductory price: **£189** (carr £6)

EPSON LX-80 PRINTER

EPSON's new Low cost High performance printer. Print speed 100 cps, NLQ mode 22 cps. 9 needle print head. Full FX-80 capability is supported with downloadable fonts. Friction feed is supplied as standard, with tractor feed and an attractive auto sheet feeder. NLQ Mode and current typeface selectable from front panel. This attractive 'HiTech' design printer also features some powerful word processing functions built in, e.g. can auto justify a line of text sent to it.

Introductory price: **£225** (carr £6)

SPECIAL OFFER

HITACHI EPROMs for Sideways ROMs

2764-250nS £2.50
27128-250nS £4.00

RAMs (Low power) for ATPL, WATFORD, etc., Sideways ROM Boards

6264LP (8K) £5.80

4 COLOUR PLOTTER PRINTER

SAKATA SCP-800 printer/plotter facilitates plotting & printing in 4 colours on paper upto A4 size, using easily replaced pens. In text mode it prints upto 12 CPS. Max 160 Char. per line. In graphics mode it offers full plotting facilities incl. drawing, moving, scaling of text, rotation & drawing of axes. (Write for a sample printout).

Only £175

Set of 4 SPARE PENS only **£3.95**

PRINTER SHARERS

Connects

3 BBC Micros to 1 Printer	**£65**
6 BBC Micros to 1 Printer	**£129**

BROTHER HR-15

Brother HR15 is a high-quality daisy-wheel ideal for a budget printer for serious use. Notable features of this printer include a 3k buffer, 18cps (max), bi-directional proportional spacing, Centronics interface standard, (RS232 optional), optional Sheet Feeder and Keyboard.

ONLY **£325** (carr. £7)

Single Sheet Feeder	**£185**
Electronic KEYBOARD	**£135**
TRACTOR FEED Attachment	**£84**

RIBBON CARTRIDGES:
Fabric **£3.75;** Carbon **£3.75;**
Multistrike **£6**

DAISYWHEELS (various typefaces)	**£18**

With immediate effect, we are offering at no extra cost ON-SITE 12 months Maintenance on all HR15 Printers purchased from us.
W.E. GIVES YOU A GREAT DEAL

Listing Paper (Perforated)

1,000 Sheets 9½" Fanfold Paper	**£7**
2,000 Sheets 9½" Fanfold Paper	**£13**
1,000 Sheets 15" Fanfold Paper	**£9**
Teleprinter Roll (Econo paper)	**£4**

Carriage on 1,000 Sheets £1.50

PRINTER LABELS

(On continuous fanfold backing sheet)

1,000 90×36mm	**£5.00**
1,000 90×49mm	**£7.75**
1,000 102×36mm	**£6.25**

Carriage on 1,000 Labels £1.00

All prices exclude VAT

KAGA KP810 NLQ PRINTER

This excellent printer is fully Epson FX-80 compatible and offers superb NLQ printing. Over the last year, we have sold more of these printers than any other make. Write in for further details of this printer.

Special Offer: ONLY **£239** (£7 carr.)

Kaga RS232 Interface	**£49**
Kaga RS232 Interface + 2K Buffer	**£69**
Kaga RS232 Interface + 16K Buffer	**£95**

KAGA KP910 Printer

Similar to the KP810 but with 17" carriage for wide print. Gives 156 columns of normal print or 256 columns in condensed mode. Ideal for printing out spreadsheets.

ONLY **£339** (£7 carr.)

PRINTER LEAD

Centronics lead to connect BBC micro to EPSON, KAGA, SEIKOSHA, NEC, STAR, JUKI, BROTHER, SHINWA etc. printers.

Standard length (4 feet long)	**£6**
Extra long (6 feet long)	**£9**

We can supply leads to any required length.

RS232 Cables available in any length and any combination. Please telephone for your requirement.

PRINTER RIBBONS & VARIOUS DUST COVERS

Type	Ribbons	Dust Covers
RX100/MX100/FX100	£10.00	£5.25
FX80/MX80	£4.50	£4.95
RX80	£4.50	£4.50
GP80	£4.50	–
GP100	£4.95	£3.95
GP250	£5.95	£3.95
KAGA KP810	£5.95	£4.75
CANON PW1080	£5.95	£4.75
MICROVITEC MONITORS	–	£5,50

Our attractive Dust Covers are manufactured from translucent PVC. The seams are stitched and edges are taped to prevent splitting due to continuous use.

PRINTERS

- EPSON RX80 Printer **£209**
- EPSON RX80 F/T Printer **£219**
- EPSON RX100 **£342**
- EPSON FX80 Printer **£315**
- EPSON FX 100 Printer **£429**
- EPSON JX-80 Full Colour Dot Matrix Printer. Prints in 7 Colours. Upto 160 cps **£525**
- EPSON Paper Roll Holder **£17**
- FX80 tractor attachment **£37**
- Centronics Printer Cable to interface all the above Printers to BBC **£6**

(Securicor carriage charge on printers £7)

EPSON HI-80 PLOTTER

The latest addition to the popular range of EPSON Printers/Plotters. Prints in upto 10 colours. Has many more features. Please write in for spec sheet.

£345 (£7 carr.)

RX & FX PRINTER INTERFACES

Epson interfaces fit inside the printer to allow connection using techniques other than Centronics.

RS232	**£25**	RS232 + 2K Buffer	**£55**
IEEE 488	**£62**		

We stock a range of monitors to suit all needs. Choice of a monitor is a matter of personal taste so we recommend that whenever possible, you ask for a demonstration at our shop.

MICROVITEC

- 1431 – Medium resolution as used on the BBC television computer programme **£185**
- 1451 – High resolution, suitable for word processing in mode 0 ..... **£229**
- 1441 – High res, exceeds the capabilities of the BBC micro **£385**
- 1431AP RGB + PAL and AUDIO **£199**
- 1451AP RGB + PAL and AUDIO **£269**
- Dust Cover for Microvitecs **£5.50**

All Microvitec Monitors are 14" and are supplied complete with cables.

KAGA

- KAGA KX1201G Hi-res Green Monitor **£90**
- KAGA KX1202G Ultra-Hi-Res Green Monitor **£105**
- KAGA KX1203A Ultra-Hi-Res Amber Monitor **£105**
- KAGA Vision 2, Hi-Res, RGB Colour Monitor **£225**
- KAGA Vision 3, Ultra Hi-Res, RGB Monitor **£310**

NEW

FIDELITY COLOUR MONITOR

- Medium Resolution, attractively finished, 14" RGB and Composite VIDEO/AUDIO Input. Has a detachable anti-glare screen. Supplied complete with cables.

Introductory Offer: **£169**

ZENITH

12" high resolution monochrome monitor. Ideal for word processing as its green or amber screen is very restful to read. The high resolution makes it good for games too – you can really see the detail that has been put into the graphics **£66**

LEADS

BNC Lead for Zenith or Philips **£3**
RGB lead for KAGA **£5**

N.B. Carriage on Monitors **£7** (securicor)

NEW

ROM-SPELL

ROMSPELL is the new fast Spelling Checker ROM from Watford, Packed with excellent features, ROMSPELL is probably the most advanced spelling checker available for the BBC micro.

Features include:

- 30,000 word dictionary
- One pass check
- Two pass check
- Ambiguous word check
- Basic access to ROMSPELL
- Immediate entry check

ROMSPELL is fantastic value at **£25**

(Please specify 40 or 80 tracks when ordering)

BBC MICRO WORD-PROCESSING PACKAGE

A complete word-processing package (which can be heavily modified to your requirements, maintaining the large discount). We supply everything you need to get a BBC micro running as a word-processor. Please call in for a demonstration.

EXAMPLE PACKAGE

BBC Model B, Watford Electronics' DFS upgrade, WORDWISE ROM, Twin 400k Epson drives in beige, Zenith 12" Hi-resolution monitor (Green or Amber), Brother HR15 daisywheel printer. Gemini software: BEEBCALC spreadsheet, analysis and DATABASE software on disc. 10 × 3M disc, 500 sheets fan-fold paper, 4 way mains trailing socket, manuals, all leads and BBC carrying case.

NEW LOW PRICE

Only £999

ACCESS & VISA HOT LINE (0923 50234)
24 Hours

THE EPSON RX/FX/KAGA PRINTER COMMANDS REVEALED

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

Now what do you do, when this £400 piece of high technology refuses even to move its head, and you have stayed up until 2 in the morning with copious supplies of coffee, desperately trying to print something out. Once again, Watford Electronics comes to your help with our new book entitled 'THE EPSON FX/KAGA PRINTER COMMANDS REVEALED'.

This book describes in plain, easy to understand English how to use your printer (Kaga KP810, Canon PW1080A, or any other Epson FX-80 compatible printer) with the BBC micro, both from Basic and your Wordwise wordprocessor.

It describes in detail how to obtain the maximum in graphics capability from your printer and includes full indexes allowing you to cross index the numerous commands. Every command is explained in detail, with an accompanying BBC Basic program and an example of its use from Wordwise.

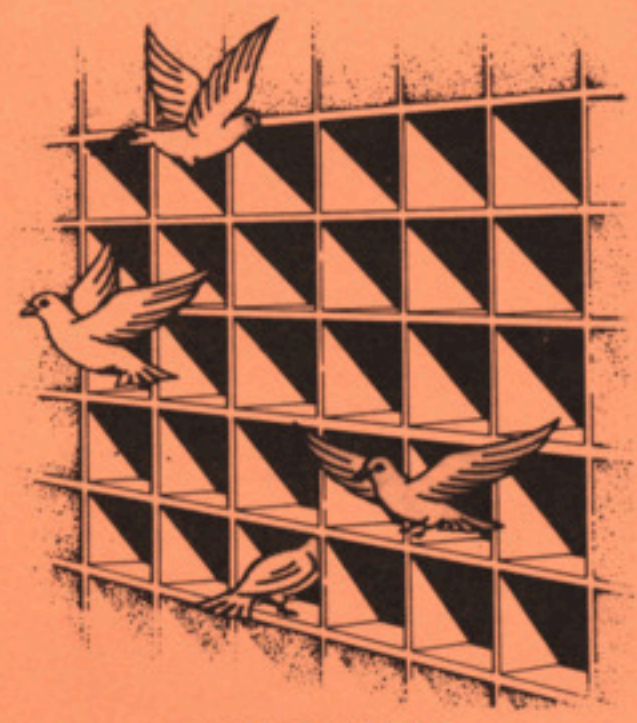
This book is superb value at only **£5.95** (Book – No VAT)

This Light Pen for the BBC micro is packaged in a neat pen shape with built in switch. Supplied complete with our sophisticated Pen-Pal software on cassette (see elsewhere in this ad).

Only **£23**

(For software on disc please add £2)

DATABASE MANAGEMENT SYSTEMS



DISCDATA

Discdata is an entirely disc based database handling system. It is extremely easy to use through its comprehensive menu system. The simplicity is such that we do not feel the need to provide explanation on use in the written guidance supplied with the program. The first-time database user will rapidly become familiar with this package designed throughout to be simple and obvious.

On disc at **Only £17**

(Please specify 40 or 80 track when ordering)
(Please write in for technical specifications)

FILE-PLUS

The File-Plus package is even more powerful and flexible than Disc-Data. It is also largely menu driven but has its own command language for file searching. The 16K ROM contains all the normally required routines, with lesser used options supplied on the utilities disc. All input and output formatting is controlled through screen forms. A full screen editing system is used to define a form which allows tremendous flexibility in the format in which your data is displayed. It is very easy to change from form to form so that you can type in your data with one form, and examine it with others. You will typically design several forms before starting to access the database so that you can quickly and easily see the fields of each record that you want to appear in the layout you decide on. The form system is also used for output to your printer. File Plus has a unique file linking system that allows the entire on-line storage of your system to be used for one database. This can give around 1.5 Megabyte databases using dual drives and double density.

The built in FQL (File-Plus Query Language) can be used for searching the database. Presented in the form of a powerful command language with looping facilities etc. this allows the most flexible access to your data possible. Full arithmetic operations are provided to allow the system to be used for statistical analysis.

Cont.

Operations supported are –, +, *, /, +–999999 9999.9999 and compare facilities =, >,<>>=, >=, <, &,.

Many keywords are supported by the language: assign, compare, display, and, goto, iff, ift, print, read, search, spool and update.

Supplied with a very detailed 70 page manual to explain all the facilities with many examples.

Only £43

(Please specify 40 or 80 tracks for the utilities disc)

DATAGEM

Gemini's 24K ROM based DATABASE Management System

Special Offer: **£85**

Continued →

COMING SOON

The DELTA CARD

Fourth Generation BBC Hardware Representing new standards in economical computing power, the Delta Card is the latest in fast 6502 'processor' boards for the BBC micro. Speed increases of upto 100% are fully supported by an additional 48k of fast RAM (16k sideways and 32k for screen overlay). The Delta Card transforms your BBC into a far more powerful system with FULL compatibility with ALL standard programs.

NEW LAUNCH

Le Modem

The MODEM from Watford

At last a professional MODEM for the BBC Micro. Unlike other 'Modem packages' this is a complete package there are no extra software costs to get 'up and running'. Of course Le MODEM is multi-standard, i.e. 300/300, 1200/75 UK and BELL (USA) are all supported.

The features that make Le MODEM such good value are:

- *A complete communications terminal that transforms your BBC Micro into a very powerful World/wide data transfer system.*
- *Auto Dials, Auto Answers, Auto Baud selects and is completely controlled by your Micro. There are no external controls!*
- *Allows you to access PRESTEL, B.T. GOLD, THE SOURCE, MICROLINK, MICRONET, MICROWEB, THE TIMES NETWORK, MICRO LIVE (BBC TV database), CITY BB and more.*
- *Designed to be SIMPLE but SOPHISTICATED. To LOGON to a data base all you have to know is its TELEPHONE NUMBER, Le MODEM does the rest.*
- *Supplied with a comprehensive telecomms package in a 16K sideways ROM which includes a FULL PRESTEL terminal allowing TELESOFTWARE to be downloaded.*
- *A comprehensive 80 column terminal. This includes XMODEM error checked transfer protocol, to allow error free data transfer anywhere in the world!*
- *FULLY controlled by simple "*COMMANDS allowing you to control it from your own BASIC programs. To get you started we supply a FREE disc of bundled software!*
- *Connects to the 1MHz bus. A *AUDIO ON/OFF command allows you to actually hear the telephone line through your BBC micro loudspeaker.*
- *Completely self contained with internal mains power supply. (Even a free mains plug is fitted!) A *TEST facility gives ON SCREEN indication that Le MODEM is working correctly.*
- *Packaged in such as way that you need nothing else except a BBC Micro to communicate with computers all over the world.*

- *BT Approval applied for.*

Launch Price: Only **£89** (carr £3)

NEW LAUNCH

The Watford ROM/RAM CARD
A must for all serious users

We, at Watford Electronics, have been producing high quality hardware and software products for the BBC for three years now. Having carefully observed the needs of our customers we set our top hardware engineer the task of producing the ultimate ROM board to meet all your ROM/RAM requirements.

After weeks of top secret development we are now able to bring you more details of this, the ultimate in ROM/RAM boards.

● No overheating problems. ● No User Port corruption. ● Full buffering. ● NO SOLDERING. ● No flying leads. ● Firmly mounted. ● Easy fitting. ● Up to 8 banks of 16k of Dynamic RAM. ● One bank of 16k CMOS Static RAM allowed. ● All RAM has Write protect. ● All RAM has Read protect. ● CMOS RAM can have battery backup. ● Special RAM write register. ● Can run any BBC ROM. ● FREE utilities disc. ● Compatible with DDFS boards. ● Compatible with our 32k RAM Card. ● Compatible with our Sideways ZIF. ● Large printer buffer (up to 128k) ● High speed disc backup via RAM.

Obviously, so much RAM requires some powerful facilities to use. To show you just how powerful the features our board offers are, and to convince you that the competition if any, is just simply not worth buying, we shall provide some more details on the advanced features offered.

Each socket has write protection to allow all ROM based software to be run. Also, to help during software development, each socket is equipped with a special read protect facility (this allows recovery from ROM crashes).
Up to 8 ROMs and 8 banks (each of 16k) of RAM may be used, or one of the ROMs may be configured to give 16k of battery backed CMOS Static RAM.

The RAM socket selection (which is independent of the normal ROM socket) is performed by a special register at &FF30. In normal systems, a "write" to this location would have no effect. We believe that there is available an inferior board in which, for some totally unexplained reason, the User Port (as used by the AMX Mouse, Eprom Programmers, etc.) is used for the selection. Obviously this was not a very sensible move on the part of this manufacturer.

The ROM/RAM card from Watford represents second generation ROM board technology and is a must for all serious users of the BBC Micro.

Please write in for technical details and further prices.

INTRODUCTORY PRICES:

- ROM/RAM CARD with 16K Dynamic RAM **£38**
- ROM/RAM CARD with 32K Dynamic RAM **£45**
- ROM/RAM CARD with 64K Dynamic RAM **£69**
- ROM/RAM CARD with a massive 128K RAM **£109**

OPTIONAL EXTRAS:

- 16K Plug-in STATIC RAM **£14**
- BATTERY for Battery BACKUP **£2**

The ULTIMATE DFSs for the BBC MICRO

WATFORD TOPS THE DFS CHART

Watford's Ultimate DFS has scored highest points in ACORN USER's unbiased DFS's Review of July 1985.
In concluding, the reviewer writes "It must be said that Watford's DFS certainly offers a comprehensive range of facilities at a very attractive price". (Please write in for comprehensive details.)
To celebrate the occasion, we are offering Watford's complete Disc Interface Kit at £65 only.

Just compare the features:

Features	Acorn 1.20	Watford Single Density	Watford Double Density
Max nos. of files per disc side	31	62	62
Max disc capacity	800k	800k	1440k
Tube compatible	Yes	Yes	Yes
Built-in Editor	No	Yes	Yes
Built-in Formatter	No	Yes	Yes
Built-in Verifier	No	Yes	Yes
MRUN a file	No	Yes	Yes
MLOAD a file	No	Yes	Yes
Extended RENAME	No	Yes	Yes
Selective COPY	No	Yes	Yes
Default file name	No	Yes	Yes
Disc space distribution	No	Yes	Yes
40/80 Software Switchable	No	Yes	Yes
Wide catalogue	No	Yes	Yes
Close open files	No	Yes	Yes
Improved OPENOUT	No	Yes	Yes
Copy between densities	N/A	N/A	Yes
OSWORD &7F	Yes	Yes	Yes
Full entry point compatibility	Yes	Yes	Yes
Retain information over a break	1.20	1.42	1.52
	partial	Yes	Yes
Games compatibility	Yes	Yes	Most
Econet file server	Yes	Yes	Yes
Econet station	Yes	Yes	Yes
Full wildcard facilities	No	Yes	Yes

WATFORD's & ACORN's SINGLE DENSITY DFS

Watford's popular and widely acclaimed DFS has now been available for two years, and has gained a large following amongst serious users of the BBC Micro. Owners of Acorn or any other standard DFS can upgrade to our "Ultimate" DFS merely by replacing their DFS ROM. See below for this upgrade.

PRICES

- *Complete Disc Interface Kit incl. DFS ROM & fitting instructions* **£65**
- *Acorn's DFS Kit complete* **£70**
- *DFS Manual (Comprehensive)* *(no VAT)* **£6.95**
  (P.S. Our comprehensive DFS Manual covers both Acorn & Watford DFSs)
- *Watford's sophisticated DFS ROM only* **£16**
- *We will exchange your existing DFS ROM for Watford's Ultimate DFS ROM for only* **£12**
- *Watford's DFS is exclusively available from Watford Electronics. Every ROM carries a special label with our LOGO and serial number.*

WATFORD's DOUBLE DENSITY DFS INTERFACE

The DDFS from Watford Electronics represents a new standard in DFSs for the BBC micro. This is a double density version of our popular single density DFS, and combines all the features of this powerful DFS with the advantages of a system that gives 80% more storage per disc in double density mode. P.S. – Please note that not all DDFSs are capable of providing either the full 80% storage increase, or of allowing a file the full size of the disc – Ours allows both of these!

The typical piece of games software these days is provided upon a protected disc. In order to work on any double density system (including the others on the market) a protected piece of software needs to make calls through the OSWORD &7F routines. To ensure compatibility, the Watford DDFS features probably the most comprehensive and powerful 8271 emulation ever written for a double density system.

PRICES

- *Complete DDFS Kit incl. fitting instructions* **£79**
- *DDFS Manual* *(no VAT)* **£6.95**
- *We will exchange your existing Single Density for our DDFS Unit at* **£40**

Quality Disc Drives from Watford Electronics

To help you decide which drive is the most suitable for your needs (and your pocket!), we have produced the table below.

The first capacity given in the first column indicates the single density capacity. The double density storage capacity is second one, (that within the brackets). All disc Drive type numbers start with the prefix "C".

The tinting on some of the boxes is used to indicate which Drives are 40 track and which are 80 track. The 40 track ones are manufactured by EPSON, the world famous Japanese company, (non-tinted boxes). The 80 track drives are famous MITSUBISHI drives (tinted boxes).

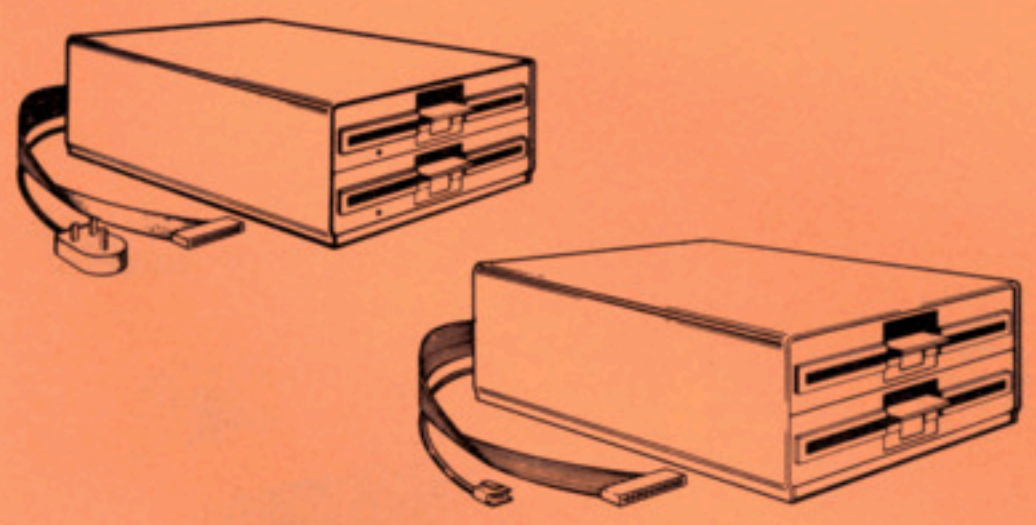
With two prices in a box (e.g. £295/£299), the first price is for the standard drive and the second for the same unit in switchable type. Users of either of the two Watford DFSs will not need switchable drives as their DFS will provide software switching for them. Users of Acorn's DFS will find that they need to pay the extra for switchable drives if they wish to use 40 track discs in an 80 track drive.

The drives we supply are fast (3ms track to track, 15ms settle), quiet and have a low power consumption (average well under 1 amp). Extensive experience of the usage of disc drives suggests that the MITSUBISHI and EPSON drives currently represent about the best in terms of speed, reliability and overall "elegance" available for the BBC Micro.
Various other "manufacturers" of disc drives for the BBC micro (more accurately, "packagers" label other manufacturers drives with their own name). We buy the high quality Epson and Mitsubishi drives in large quantities directly from the manufacturers, package them and sell them at "dealer" prices direct to the public.

Names you can trust, at prices you can afford!

If you look around the popular BBC micro press, you will find that the prices we quote for the top quality, new slimline disc drives are, virtually without exception, some of the best around. These prices, coupled with the backup of one of the country's largest distributors of BBC peripherals provides a superb deal.
Unless you anticipate using dual drives in a fully expanded BBC system for long periods of time with little ventilation, then we suggest that our range of "CL" disc drives without the PSU (Power Supply Unit) would be quite adequate: extensive tests within our workshops have confirmed this. All drives are supplied complete with a SPECIAL UTILITIES Disc, Cables and Plugs. The Drives with power supply have a mains moulded plug for safety purposes. (Ideal for Schools & Colleges. All single disc drives with power supply, (i.e. CS100, CS200 & CS400S) are supplied in a twin case with twin data cable for later inclusion of a second drive). At Watford we anticipate your needs of tomorrow not just today!

All disc drives advertised here will operate in double density mode with the appropriate interface and software.



Capacity	Drives without P.S.U.		Drives with P.S.U.	
	Single	Twin	Single	Twin
100K (180K)	CLS100 £85		CS100 £107	
200K (360K)	CLS 200 £86	CLD200 £164	CS 200 £110	CD200 £180
400K (720K)	CLS 400 £110 / £115 CLS400S	CLD 400 £165	£135 CS 400S	CD400 £185
800K (1.44M)		CLD800 £230 / £240 CLD 800S		£259 CD 800S

- TWIN drive CASE, with Power Supply & Cables **£35**
  Securicor carriage on Disc Drives £5

Prefix *C = Cased Drive*
L = Less PSU
S = Single
D = Double

Suffix *S = 40/80 Switchable*

e.g. CLS400S = Cased drive, Less power supply unit, Single 400K, Switchable (40/80 track).

MYSTERIES OF DISC DRIVES & DFS REVEALED

Are you tired of faulty cassettes, and lengthy loading times? Do you want to upgrade your BBC micro to take discs but you get tied up in the plethora of jargon surrounding the choice and use of these systems.

For instance, what is the difference between single and double density formats, how can you use a 40 track disc on an 80 track disc drive? What is the difference between a DFS and disc interface kit? Should you acquire a single Disc drive or twin? What does 48 TPI and 96 TPI discs mean? These are just a few of the questions you may have asked yourself and never found the answer or maybe you have yet to encounter these questions.

Now the mystery of buying a suitable interface and disc drive for your BBC micro is revealed in Watford's new book entitled 'MYSTERIES of DISC DRIVES & DFS REVEALED'. It describes in fine detail, yet remaining very readable to the beginner, how disc drives operate, the type of interfaces available, which type of discs to use on a disc drive and how data is stored on the discs.

£5.95 (Book No VAT)

3M – 5¼" DISKETTES

Top quality 3M – SCOTCH Diskettes from Watford Electronics (Your 3M Appointed Distributors). All our discs carry a lifetime warranty. These discs are quiet in operation and insert positively with their reinforced hub rings. Boxes of 10 supplied complete with self stick disc labels and write protect tabs.

DON'T SETTLE FOR LESS, BUY THE BEST

- *10 × S/S D/D 40 Track Diskettes* **£13**
- *10 × D/S D/D 40 Track Diskettes* **£18**
- *10 × S/S D/D 80 Track Diskettes* **£22**
- *10 × D/S D/D 80 Track Diskettes* **£24**

QUALITY 5¼" DISKETTES at KNOCK DOWN PRICES

To complement the range of quality discs and disc drives that WE already sell, WE are now supplying some special offer packs of 10 high quality discs, each with a life-time guarantee. These are supplied packaged in an attractive plastic library disc box to protect them from damage.

- *10 × **M4** S-S D/D 40 Track Discs* **£11**
- *10 × **M5** D/S D/D 40 Track Discs* **£15**
- *10 × **M7** D/S D/D 80 Track Discs* **£20**

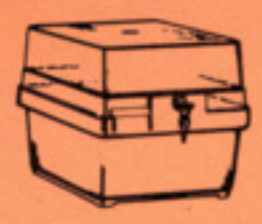
DISC ALBUMS

Attractively finished in beige leather-look vinyl, these conveniently store upto 20 Discs. Each Disc can easily be seen through the clear view pockets.

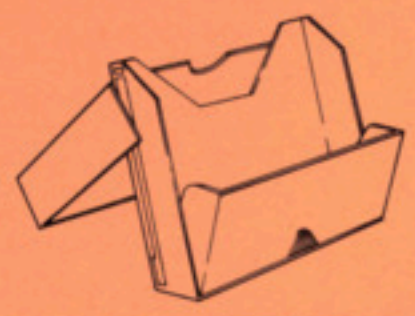
£4.25

LOCKABLE DISC STORAGE UNITS

Strong plastic case that afford real protection to your discs. The smoked top locks down. Dividers and adhesive title strips are supplied for efficient filing of discs.



M35 - holds upto 40 discs **£10**
M85 – holds upto 95 discs **£12**



PLASTIC LIBRARY CASES

FOR 5¼" DISC STORAGE
holds 10 Discs. **£1.80**

FLOPPY HEAD CLEANER KIT

The heads in floppy drives are precision made and very sensitive to dirt. The use of a cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. It is very simple to use.

£8

DUST COVERS (For our Disc Drives)

Single (without PSU) **£3.20** Twin (without PSU) **£3.85**
Single (with PSU) **£3.25** Twin (with PSU) **£3.90**

Continued →

Impress your friends and business colleagues with the quality of your letters and printed material with Watford's very simple to use EPSON NLQ! (Near Letter Quality) ROM. Suitable for FX80, RX80, RX80F/T, FX100.

Look at the features:
- Simply type *NLQ80/100 and a single VDU code to use NLQ print.
- NLQ is then available without any modifications from BASIC, WORDWISE, VIEW (with NLQ DRIVER) or virtually any other program or language.
- Single codes select PROPORTIONAL type (yes even on the RX80); ENLARGED type; UNDERLINED type. These features can be used seperately or in any combination.
- Full UK character set; Standard 'pica size'; Proportional spacing; Enlarged; Underlined; Normal type.

The NLQ ROM is supplied complete with comprehensive manual.

P.S. NLQ ROM is compatible with the Torch Z80 system and can be used from within the Perfect Writer software.

Only: £22

VIEW PRINTER DRIVER for NLQ ROM

This specially written printer driver has been designed to allow View access to the full features of our NLQ ROM.
A must for all VIEW and NLQ ROM users.

£7.00

NEW LAUNCH

THE NLQ DESIGNER

The Kaga Taxan KP810 and KP910 are two superb printers, as our many thousands of satisfied customers would surely attest to. One of it's particularly strong points is the NLQ option that it offers; perhaps one of the more weaker points is the effort required to design your own custom NLQ font.

Well the solution is here NOW in the shape of Watford's NLQ DESIGNER ROM! This powerful piece of software allows easy design and entry of a full NLQ font, with further fonts recallable from disc. Once a font has been programmed with the versatile NLQ DESIGNER, it can be saved to disc, downloaded to your Kaga (or Canon) printer, or even programmed into an EPROM (given the appropriate hardware) and then plugged directly into your printer so that it is available immediately when you turn it on.

A 40/80 track format disc containing 3 example fonts is included in the package.

(P.S. This ROM is not suitable for Epson printers as they don't normally have NLQ ability. Keep reading our adverts though – work is in development!)

NLQ DESIGNER & FONT DISC **£25**

INDIVIDUAL Preprogrammed FONT ROMS **£15**

(Please write in for further details on both the NLQ DESIGNER and the individual font ROMs available.)

DUMPOUT 3

A highly sophisticated screen dump ROM. This has to be the most flexible and powerful screen dump ROM yet produced for the BBC micro. It will put on paper anything you see on the screen, including all Mode 7 facilities etc. We have to admit that there is one facility that we cannot replicate – if anyone can supply flashing ink we would like to know!
The ROM also provides window setting utilities and two new OSWORD calls that allow mode 7 graphics pixels to be read and plotted using the standard graphic co-ordinate system. The latest version includes a graphic dump trigger for dumping screens from games whilst they are running.
Two commands are used to operate the dump routines:
*GIMAGE – This provides a full graphics dump of any graphics mode, plus modes 7 and '8'. There are many optional parameters but you need only specify the parameters you wish to change.

Features available include:
- Vertical and horizontal scaling through all the graphic modes and mode 7
- Rotation of the image produced through 90, 180 and 270 degrees
- Left hand indentation setting
- Screen dump window definition
- Colour grey scaling
- Two tone fast dump
- Special colour mask
- Mode 7 contrast expansion
- Mode 7 contiguous dump
- Key triggered dumps
- User port switched dumps

What does the independent press say!

Practical Electronics, May 1985
"The Dump Out 3 ROM from Watford Electronics represents one of the most sophisticated types of printer dump utilities available for the BBC Micro . . .".

"an extremely sophisticated and powerful dump utility".

"VERDICT – Dump Out 3 ROM has all the facilities which you are ever likely to need for producing printer dumps. The facilities available work extremely well and if printer dumps are something which you require, then this ROM can be recommended to help you to get the best out of your dot matrix printer".

The Micro User Feb. 1985.
"Well, here is that winner"!

"provide(s) some rather sophisticated screen dumps. Producing high resolution paper copies of graphic screens in any (graphics) mode will be the major reason for buying this ROM, and this is where Dump Out 3 performs PAR EXCELLENCE". (Our capitals for their italics.)

"The versatility of *GIMAGE (the graphics dump command) when using these parameters is amazing. Pictures of almost any size, shape, contrast or distortion may be produced without the need for a reducing photocopier or trick photography".

"Without reservation I wholeheartedly recommend the Dump Out 3 ROM as the ultimate screen dump facility for the BBC micro. It is easy to use yet highly versatile, and caters for all BBC screen modes in multitone high resolution printing. Whole, partial, rotated and scaled screens may be dumped to almost any BBC compatible dot matrix printer (see our list at the end of this advert). At £24 it must represent excellent value for money and surely cannot be beaten".

Designed for use with the following printers:
CP80, GP80/100/250, CANNON, STAR, KAGA/TAXAN, NEC, SHINWA CP80, GEMINI, EPSON MX/RX/FX, LPVII, NEC PC8023, DMP100/120/200/400, etc. etc.
Price including comprehensive manual

£24

SPARK DUMP ROM

A screen Dump ROM for the Acorn/Olivetti Spark jet printers. Works in modes 0/1/2/4/5/7. Does vertical & Horizontal scaling. Positive & Negative grey scaling.

Only: **£12**

VIEW

VIEW WORDPROCESSOR
We are supplying the new VIEW version 2.1 allowing printing of memory contents etc **£46**

HI-VIEW

A special version of VIEW designed for use with 6502 2nd Processor. Available on disc, it offers 47K of text memory.

£49

VIEWSHEET (Acornsoft) **£49**

Watford's own Sophisticated VIEW PRINTER DRIVER for Epson FX80 & KAGA KP

Only £9

VIEW DRIVERS FOR JUKI & BROTHER PRINTERS

Only £8

VIEW/VIEW SHEET PRINTER DRIVER for SILVER REED

(Officially approved by Silver Reed)

A range of VIEW Printer drivers to complement the Silver Reed range of printers EXP400/500/550 & 770 EB 50 and converted typewriters EX43/44 & 55.

Only: £8

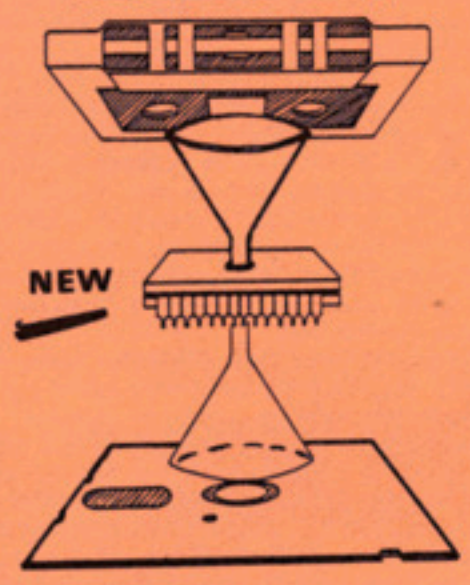
BEEB PRINTER ROM

This utility ROM is designed to simplify using all the facilities of your printer. It has many facilities:
★ Selection of printer modes such as underline, font and size is by 'Single Key' operations.
★ From Wordwise, a single number following OC will select a mode rather than a long and incomprehensible string of control codes. This makes using your printer with Wordwise much more convenient.
★ When using Basic (or other languages) you can have control over the formatting of the output to the printer in the style of a wordprocessor. You can define page top, bottom and side margins etc. with intelligent page skip for binders an option. All supported printers will now respond to form-feed etc. commands.
★ User defined characters are printed as you see them on the screen so that non-standard characters are automatically printed out correctly.
★ Commands select the options for the following printers:
GP100, STAR, NEC, MX/FX, KAGA, LP/VII/DMP100, DMP200.
Operates with either parallel or serial interfaces.
★ Supplied with a 50 page manual that is very comprehensive and easy to follow. Please specify printer type when ordering so that we can send the correct function key strip.

Price: £24

TRANSFEROM

(Tape to Disc Utility)



The only TAPE to DISC Utility ROM that works with our Double Density Disc Interface.

After months of top secret development, we are now able to supply details of this advanced and sophisticated utility ROM for the BBC micro. Just look at the features:

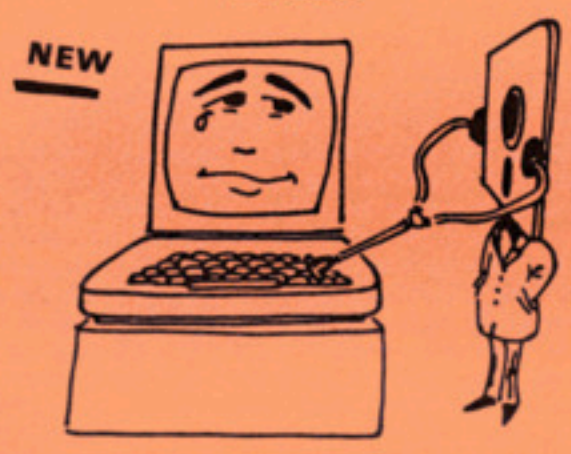
- Fully menu driven for ease of use
- Copes with locked programs
- A very comprehensive built in copying features
- Copies very long adventure games
- Supplied with comprehensive manual

TRANSFEROM is now available in BOTH single and double density versions. The single density version works with both the Acorn and Watford single density DFSs. The double density version works with the Watford DDFS system only.

TRANSFEROM takes your software on tape and saves them onto disc. TRANSFEROM does not stop when one disc is full; you just insert another disc in and carry on with that one! Surely this is the most valuable investment you could make if you have tape software that you wish to transfer to disc! Please specify version required – Single or Double Density.

£22.00

DIAGNOSTICS DISC



The BBC micro is a very complex machine and thus diagnosing a fault can be very difficult. Until now, the only way to discover the nature of a fault was either to find a competent friend with a large degree of patience or to find your nearest dealer and pay him to find out what is wrong.

At Watford Electronics, we realise how difficult it can be when faced with a problem, finding yourself a long way from your nearest dealer, or even just uncertain about your Beeb's health, but not wanting to waste time and money taking it to be looked at.

The solution to these problems is here now, in the form of the Watford's Diagnostics Disc. This excellent utility is specially designed to test out the following areas of your Beeb:

RAMs, ROMs, ULAs, Sound, Keyboard, Disc, RS423, ADC, User Port, Printer Port, Cassette, Joysticks, Speech, Disc Drives, 6502 and Z80 2nd Processors.

Continued

This utility is an invaluable aid for all those who take the reliability of their system seriously. A comprehensive manual provides full operating details and a list of possible causes and remedies for any faults that you may find along the way. The package also enables a permanent equipment and service record to be maintained.

Only £15.00

ROMAS

THE CROSS ASSEMBLER AND MACRO EDITOR FOR SERIOUS PROGRAMMERS!

ROMAS is a carefully designed, sophisticated yet simple to use, development system for serious assembly language programmers. Using the BBC as the development system, you can choose your target system from the following processors:

6502, 65C02, Z80, 8085, 8041, 6809 and Z8
P.S. This includes the Acorn 6502 & Z80.

ROMAS features a powerful expression analyser, making complex table easy to generate. To aid in documentation, fully formatted assembly listings may be produced, with full symbol table output at the end.

ROMAS is provided with a powerful cross referancer to produce a listing of all the labels in a given "source" program; this makes it easy to check to see if you are about to duplicate a label.

The Macro Editor

Features of this powerful editor provided with the ROMAS package include:

- Works in all 40 and 80 column screen modes
- Fast load and save speeds
- Continuous line and column number displays
- Search, replace and move; all available in macros
- Command repetition

The ROMAS package includes a comprehensive manual, providing detailed documentation and plenty of examples.

A give away at . . . **Only £45**

Please specify 40 or 80 track disc when ordering.

ADE

'Systems' complete program development package in a 16K ROM. We are now supplying the new 6502 2nd processor compatible version.

SPECIAL OFFER ONLY **£43**

ULTRACALC 2

The mark 2 version of the BBC Publications' extremely popular electronic spreadsheet ROM.

Only: **£66**

THE INVESTIGATOR

This sophisticated Utility program on disc, enables you to make security back-up copies of most of your valuable Disc Software. Makes full use of all 8271 (will not run with double density DFSs) facilities to discover the precise format of your protected disc so that an exact copy can be produced. Supplied with detailed instructions. Please specify 40 or 80 track disc when ordering.

Only **£20**

BEEBMON

Watford's own Machine code Monitor ROM written by Andrew Bray (Cambridge), co-author of the BBC Micro Advance User Guide.

BEEBMON is the most powerful and versatile machine code monitor from Watford Electronics. BEEBMON offers some superb features specially designed to make the task of understanding and debugging machine code easier; indeed BEEBMON is probably the only product with sufficient power to aid in the debugging of such complex pieces of software as a DFS.
Offering a total emulation mode, BEEBMON can be used to single step through code anywhere in memory. All breakpoints are emulated and the workspace is totally relocatable, allowing for the simulation of all those "awkward" pieces of code.

Superb value for money at only: **£24**

DISASSEMBLER ROM

Discover the hidden secrets of BASIC and the OPERATING SYSTEM with this easy to use progammers tool.

ONLY **£18**

Please write in for technical details.

ROM MANAGER

'Provides comprehensive management of all your installed ROMs – BEEBUG Nov. '84'.
This ROM is unique in its capabilities. It allows you, the user, full control over the BBC Micro's sideways ROM paging system with simple to use commands. This ROM is essential for those with several ROMs. At a simple level ROM MANAGER can be used to remove the problem of clashing command names and allow full use of all the facilities of your ROMs. This is coupled with facilities to completely enable or disable various ROMs in the machine including ROM manager itself.
ROM MANAGER can also be used to develop sideways ROMs using the machine's standard memory. This is achieved by sending sideways ROM calls to your code in RAM, saving the expense of fitting sideways RAM for ROM development purposes. ROM status reports are also given by the ROM, including ROM lengths, checksums, entry points supported and current filing system title.
The ROM also provides facilities to examine ROMs, list function keys for editing, modify RAM (using a HEX/ASCII editor) and list ROM titles neatly and concisely.

Price **£20**

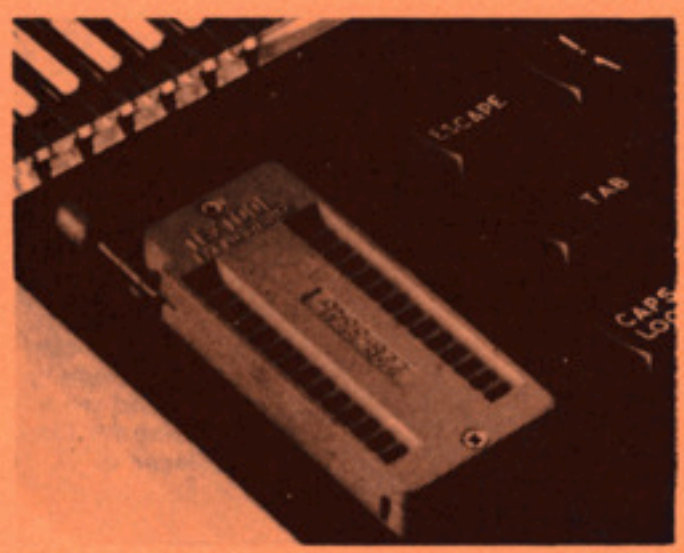
DISC EXECUTOR

Disc Executor is a sophisticated disc utility for the transfer of your programs from cassette to disc. It copes with 'locked' files and full length adventures (up to &6E blocks long) and programs that load below &E00. Disc Executor is simple to use and provides menus to prompt the user along the way. Disc Executor will cope with the vast majority of tapes. (Please note that Disc Executor is not compatible with double density disc interfaces – keep reading our adverts though!)

Price only **£10**

(Please specify whether 40 or 80 track disc when ordering)

SIDEWAYS ZIF SOCKET



Now Watford Electronics brings you a ROM board for small budgets or for those of you who do not wish to open up your Micro frequently. It allows you to change ROMs quickly and efficiently with the minimum of effort – no screws to loosen or keyboard to remove. The unit consists mainly of a zero insertion force (ZIF) socket on a small circuit board which is located into the position of the 'ROM Cartridge' and is connected to one of the internal ROM sockets via a ribbon cable.

- Very simple to install. NO SOLDERING REQUIRED. The ZIF eliminates the possibility of damage to your ROM pins when inserting and extracting them.

- The low profile of the socket allows unrestricted access to the keyboard, unlike other cartridge systems. In addition, there are no costly extras, such as ROM cartridges for every new ROM.

- All data and address lines are correctly terminated to ensure correct operation of suitable ROMs with the BBC micro. We also supply a purpose designed see-through storage container with anti-static lining, allowing you to store up to 12 ROMs, protecting them from mechanical and static damage.

- This versatile hardware solves the problem of running out of socket space, simply unplug the ROM and plug in a different one. It is a real must for Professionals and Hobbyists alike.

ONLY **£15**

Nightingale Modem

Now Watford brings you PACE's NIGHTINGALE MODEM PACKAGE including the popular Commstar ROM software for the BBC Micro. Nightingale is considered to be by far the most versatile BT approved modem available at the price for the BBC Micro. It is ideal for home or business use. It offers Prestel/Viewdata baud rates (1200/75 & 75/1200) as well as 300/300 baud full duplex for communication between BBC and other computers, including bulletin boards. A bargain at our

SPECIAL INTRODUCTORY OFFER

(Price includes COMMSTAR ROM & comprehensive manuals) **£119**

Nightingale Modem without software	**Only £99**
COMMSTAR ROM package only (P&P on modem £2.00)	**£29**
Auto Dial/Auto Answer Board	**£48**
Auto Dial Utilities Disc	**£9.50**
OBBS Bulletin Software	**£20.00**

DEMON Modem Package

Price: **£69.95** (Carr. £3)

Auto dial software disc **£4.25**

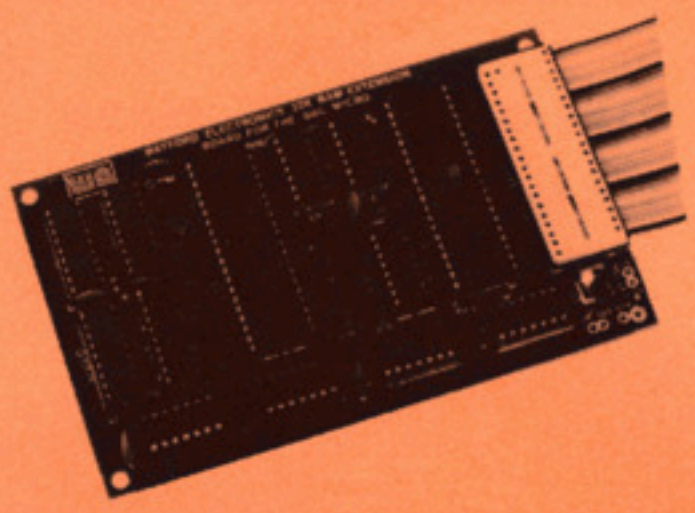
(Please specify 40 or 80 track)

(Note: Demon is not BT approved)

32K RAM-

PRINTER BUFFER

EXPANSION BOARD



A MUST FOR WORD PROCESSING

Watford Electronics now brings you the latest state-of-the-art MEMORY EXPANSION BOARD for your BBC microcomputer. Just plug the ribbon cable into the 6502 processor socket, and fit the compact board inside the computer. Immediately you will gain not 16K or even 20K, but a massive 32K of extra RAM!!!

- IMPROVE your WORD PROCESSING system, whether disc or cassette based. Don't wait for a slow printer – type in text while printing. TWO JOBS DONE SIMULTANEOUSLY and £100+ saved on a printer buffer.

- In "VIEW", type in letters in 80 columns and have up to 28,000 bytes free – 5 times as much as normal.

- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24K of text in memory. This superb product is recommended by Computer Concepts for use with both Wordwise and Wordwise Plus. We wholeheartedly agree with this commendation.

- Combine GOOD GRAPHICS and LONG PROGRAMS. Use the top 20K of the expansion RAM as the screen display memory, leaving all the standard BBC RAM free for programs. Benefit from MODE 0/1/2 graphics and 28K of program space.

- Use the FULL 32K or the bottom 12K of the expansion RAM as a PRINTER buffer for PARALLEL or SERIAL printers, sound channels, RS423 etc. Print large text files while running long graphics programs and have all your buffer options available as well (*FX15,21,138,145,ADVAL etc).

- Ensure COMPATIBILITY with a vast range of hardware (including Watford & ATPL ROM boards, double density boards, second processors), and software (including BASIC, TOOLKIT, VIEW, WORDWISE (1.20+), WORDWISE-PLUS). This is because our board, unlike those of our competitors, is connected to the computer by a ribbon cable.

- Achieve EASY OPERATION with ROM based software. A large range of commands is available for machine code and BASIC users, including some useful *HELP messages.

Offer price

Only: £60

(Price includes a comprehensive manual and the ROM)

GRAPH PAD

With this popular British Micro's Graph-pad, you can add new dimensions to your computer enjoyment. It helps you to create your own application programs by the simple use of the Graphpad. Ideal for Educational use. Supplied complete with Cables, Manual and a two program cassette.

SPECIAL OFFER **£86**

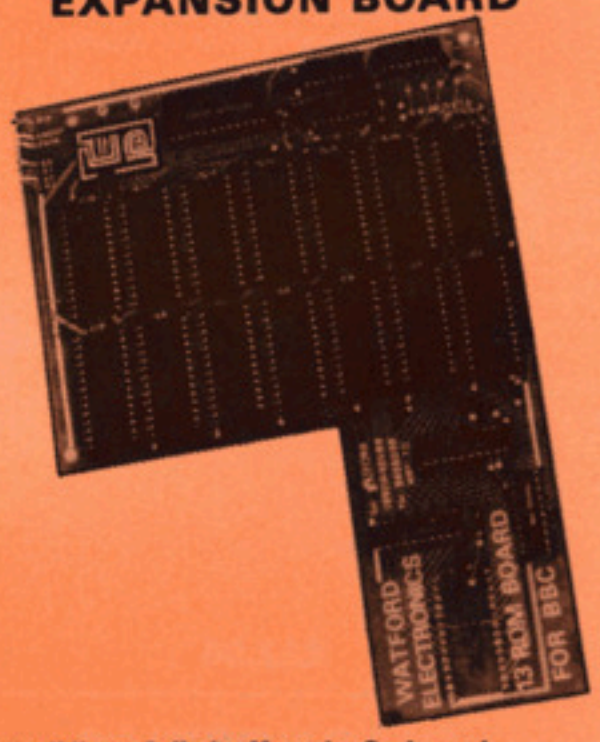
BEEBFONT ROM

BEEBFONT is a remarkable and different concept in BBC software supplied on a 16K ROM. It allows you to display text on the screen in 13 different styles:

It works in modes 0, 1, 2 and 4 using the full colour capabilities of each mode. Characters are printed in the same way as normal. Selection between the various fonts is very easily achieved with Ctrl-V – press this followed by a font number and the output will continue in the new font. Beebfont ROM is particularly useful in display work with the characters produced at twice the normal size.
You can create your own character fonts with the editor supplied. You can also print-out pre-formatted text files using the special characters with Epson FX, RX and NEC printers. The full range of character styles can be used, controlled from within the text. The editor and spooler program are supplied with the package, on cassette or disc. The spooler allows word processor (Wordwise & View) output to be printed in the new characters.
A twenty page manual is supplied. Please state printer type and media for the editor & spooler when ordering (cassette, 40 or 80 track disc).

ONLY **£32**

Mk-2 13 ROM SOCKET EXPANSION BOARD



Now all lines fully buffered – On board battery back-up facility – will now accept EPROMS 2716, 2732, 2764 & 27128 and ROMs 6116 & 6264.
Simply plugs into one of the four ROM sockets currently available in BBC Micro. There are only 5 solder connections to be made. Full instructions are supplied. Unlike other ROM Boards, this board has been ergonomically designed to enable the user, easy further expansion inside the Micro, e.g. Double Density Board, Torch Board, RAM Card, etc., without any clash. (At Watford, we think ahead).
Our Mk2 13 ROM Socket Board enables the User to increase the sideways ROM capacity from the basic 4 sockets upto full 16 capable of being supported by current operating systems. In addition the board is designed with the facility to hold upto 16K RAM, which when switched into operation is automatically selected by any WRITE signal to the Sideways ROM area. This gives the User the ability to write a utility or language and upon pressing break have the utility or language up and running (new ROM software can be developed and tested in situ.)

The Board gives the User, plenty of freedom to explore the possibilities of the new paged ROMs due in the coming months and offers them the chance to develop their own.

All lines are fully buffered and the board meets or exceeds all timings for operation in the BBC Microcomputer.

Supplied ready-built and tested complete with fitting instructions.

Only £30

PCB NI-CAD Battery for ROM Boards.

£2

COMPUTER CONCEPT'S ROMS

CARETAKER Basic Utility	£28
Graphics ROM	£28
Disc Doctor ROM	£28
INTER-SHEET	£48
INTERCHART	38
TERMI	£27
COMMUNICATOR	£58
SPEECH ROM	£25

Wordwise

Without doubt a very sophisticated piece of software for the BBC Micro. It has all the features of a professional word processor yet is easy to use.

SPECIAL OFFER THIS MONTH: **£32**

WORDWISE PLUS

Now available from stock **£47**

WORDWISE PLUS UPGRADES

Existing users of Wordwise can upgrade to WORDWISE + for **£19.** Please return the old WORDWISE package complete with Chip and MANUAL with your remittance and we will send you the new WORDWISE + package.

NEW LAUNCH

Word-Aid

The most comprehensive utilities disc for Wordwise-Plus

Take advantage of the programming language in Wordwise-Plus. Simply load the disc with Shift-Break and have the power of these sophisticated new features instantly at your fingertips.

Features:

- Mail Merger
  - Can use Data files spooled from Wordwise-Plus.
  - Can use Data files from most databases.
  - Powerful Label printing facilities.
  - Mail merges with names, addresses etc. inserted into a standard letter.
- Address Finder
  - Search for names.
  - Search for addresses.
  - Insert names into text.
  - Insert addresses into text.
- Print/Preview continuous files.
- Chapter Marker.
- Search and Display.
- Remove embedded commands.
- Text transfer.
- Printer Codes – make embedding commands easier.
- Utilities supplied compressed for speed.
- Utilities supplied anotated for help.
- Supplied on 40/80 format disc.
- Very user friendly.
- Recommended by Computer Concept.

Introductory Offer: **£12**

(Further details available on request SAE, please).

THE AMX MOUSE

The AMX Mouse needs no introduction. It is simply the best.

ONLY: £68.50

We are giving away the sophisticated **COLOUR ART** Software package **ABSOLUTELY FREE** with every purchase of the AMX Mouse from us.

AMX Desk package	**£19.00**
AMX UTILITY package	**£11.50**

COLOUR ART

This novel program allows you to add COLOUR to any drawing produced with your AMX Mouse package, and really bring those pictures alive. Not with just any colours, mind you, but a full range from up to 255 different shades! It's simplicity itself to use this "painting by numbers" painter to create simple, striking and powerful images to please the eye.

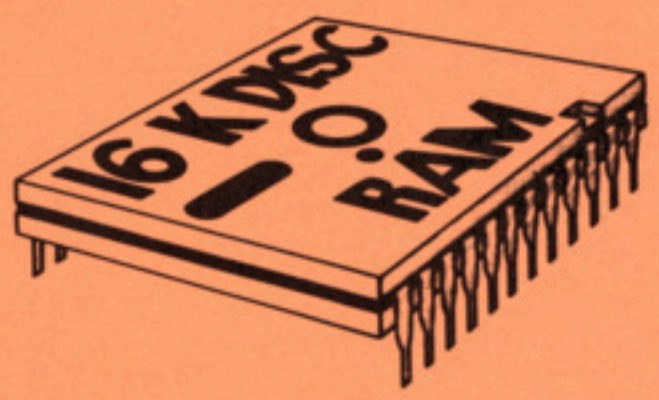
Special Offer: **£10** (£7 carr.)

(please specify 40 or 80 track disc when ordering)

PLINTHS FOR BBC MICRO AND PRINTERS

Protect your computer from the weight and heat of your monitor. The BBC micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and monitor, whilst the double height version provides enough room for our stacked or side-by-side dual disc drives or TORCH Disc pack, to be placed in the centre section. If you use our stacked drives, the remaining space can be used for further peripherals e.g. Speech Synthesizer, EPROM programmer or simply stationery. The computer slides neatly in to the lower section allowing easy access to remove the lid. The printer plinth is equally sturdy but without the cooling slots. It allows for access to the paper from the front as well as from the rear, (a facility not often thought of in similar products) if the paper is located beneath the plinth. This is a very convenient way to work especially if your work area is not deep enough to take the printer and paper separately.

SINGLE BBC PLINTH	**£11** (carr. £1.50)
DOUBLE BBC PLINTH	**£19** (carr. £2.00)
PRINTER PLINTH	**£10** (carr. £1.50)



This is the RAM you've been waiting for!! This battery backed up, write protectable 16K sideways RAM board allows you to run from disk every sideways ROM available. Beware of other sideways RAM boards which are not backed up as certain ROMs will not run in these boards even though the RAM can be write protected. The Battery Backup facility allows retention of DATA after power off. On switch on the Micro will think the WATFORD DISC RAM is a ROM. Features available are:

- No soldering or modifications to BBC micro necessary.
- Plugs into normal ROM socket fitting neatly under the keyboard allowing room for other add-ons.
- Easy to use. Comes with disk based software to SAVE and LOAD ROMs. Allows you to make backup copies of your ROMs.
- Disk software can be copied onto other discs when disc is full.
- All existing ROMs can be stored on disk and used in DISC RAM.
- No messy plugging and unplugging of your ROMs. Simply Load the one you want into DISC RAM.
- Ideal for Professional users to develop ROMs. Backup facility allows testing of final versions without using EPROMs.
- The switch provided allows backup and write protection to be switched off externally.
- Can also be used as 16K printer buffer RAM in conjunction with our Buffer & Backup ROM.

New Low Price: £32

P.S. 16K DISC RAM Board is not designed to work in conjunction with a Sideways ROM Board.

Versatile BEEB SPEECH SYNTHESISER Unit

The Watford Speech Synthesiser is a very flexible speech synthesis unit based upon the powerful phonemes system. This system stores the building blocks of speech (called phonemes) and allows you to combine them quickly and easily to form virtually any word imaginable.

Supplied with an advanced ROM, you are provided with a 500 word dictionary to get you started. These can easily be added to by following the notes given in the comprehensive manual.

SPECIAL PRICE £35

Continued →

BOOKS (No VAT on Books)

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NEW LAUNCH

BEEB VIDEO DIGITISER

THE LATEST IN HIGH TECH FROM WATFORD

Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro.

This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket.

Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem.

The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

Both the black and white levels can be adjusted manually for the optimum picture, or switched to automatic for unattended use. The image produced can be reversed if necessary.

Full controlling software is supplied on a normal sideways ROM and this is easily accessed via additional * commands. The package is designed to allow easy input of complex screens and give full access of the data to the user. Once on the screen, the image can be used as a normal graphics screen, allowing any of the usual graphics commands in BASIC or other ROM's to work on it.

A special print dump routine is included with the driver programs. This is specially designed to produce a fast, correctly proportioned picture, with reduced "contouring", resulting in an accurate reproduction of the original image.

Features offered by this package include:

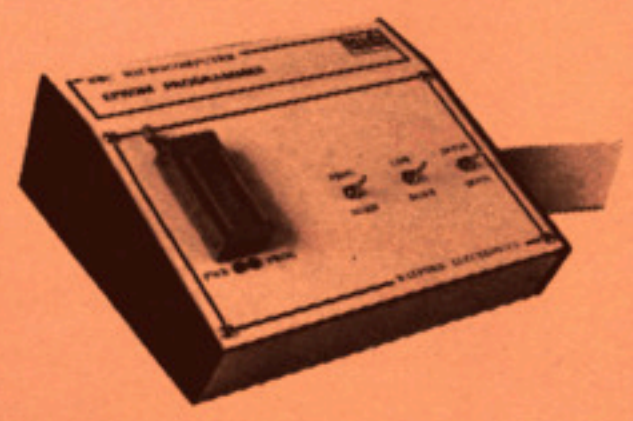
- The adding of pictures or written text to typed documents.
- Unattended recording of scientific data.
- Entry of real images into graphics programs.
- Generation of computer images.
- Slow scan television; sending images via a modem or radio.
- Security.
- Input from any video 1v video source.
- Full resolution in Modes 0,1 or 2.
- 1.6 seconds scan time.
- Up to 8 grey levels
- Manual or Auto level control
- Connects to user port

Detailed examples of driving this unit from BASIC or other languages are all provided in the extensive manual supplied.

£89 (Carr. £2)

(Price includes: Digitiser Unit, ROM & a comprehensive Manual.)

EPROM PROGRAMMER



The Watford Electronics' EPROM programmer for the BBC micro is a high quality self contained package. Programs all popular EPROMs from 2K to 16K: 2716, 2516, 2532, 2564, 2764 and 27128. All manufacturers' specifications have been followed to program EPROMs at the correct speed – wrong timings could destroy your EPROMs. The unit has its own power supply so does not put heavy loads on the BBC power supply as do some other units. Connects directly to the 1MHz bus following all Acorn recommendations on addressing and bus loadings.

SOFTWARE PACKAGE
The software is supplied on an EPROM which plugs into the Micro and is instantly available with a single command (no time wasting as on Cassette/disc loading). It is a fully purpose designed and ingegrated package to simplify ROM development. The system is menu driven with many prompts to avoid any accidents.

Software facilities include:
Load File – Save File – Down Load EPROM – Program EPROM – Verify – Blank Check – Editing of memory contents prior to programming.
Also included is an automatic system to allow Basic programs to be put in EPROM and accessed through the *ROM filing system. More than one program may be put in an EPROM. All these facilities and more are explained in the comprehensive and clear 15 page manual.

SPECIAL OFFER £69
(£3 carr.)

LOW COST 'DIN' EPROM PROGRAMMER

A high performance, low cost, self contained 'DIN' EPROM PROGRAMMER for the BBC Micro. Plugs into the BBC Micro's user port.

The features are:

- Will program 2716, 2732, 2532, 2764 & 27128 EPROMs.
- Copy Eprom into memory and compute checksum.
- Blank check EPROM.
- Program EPROM from memory.
- Verify programmed EPROM and display checksum.
- All * commands may be used from menu mode.
- High speed programming on 2764 & 27128.
- Machine code SOFTWARE supplied in ROM.

Only: **£49.50** (carr. £2)

TEX EPROM ERASERS

EPROMs need careful treatment if they are to survive their expected lifetime. Over erasure of EPROMs very rapidly turns them into ROMs! The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast. We use these erasers for all our own erasing work.

- **ERASER EB** – Standard version erases up to 16 chips. **£28**
- **ERASER GT** – Deluxe version erases up to 28 chips. Has automatic safety cut-off to switch off the UV lamp when opened. **£30**
- Spare UV tubes. **£9**

ANTI GLARE MONITOR SAFETY SCREEN

HEADACHES? TIRED EYES? Don't take pills – Use a Watford Electronics anti-glare filter!

Available in 12" & 14" versions – please specify the exact monitor type when ordering.

Special Price: **£16.00** (carr. £2)

SURGE PROTECTOR Plug

Fitted in place of your normal mains plug, this device protects your equipment against mains surges. Nearby lightning strikes, thermostats switching and many other sources put high voltage transient spikes on to the mains. This can lead to data corruption in memory and on disc and can result in spuriously crashing machines. Suitable for computers, Hi-Fi, Fridge Freezers etc. Max Surge current 2KAmp; max. Voltage 250. Essential for serious computer users.

Protection for only **£9.50**

FLEXIBLE KEYBOARD CONNECTOR

A 'Keyboard to Micro' replacement jumper lead.

£4

ATTACHE CARRYING CASE for BBC Micro

The Attache carrying case is attractively finished in mottled antique brown leatherette. The case is made of tough plywood, providing a very solid and safe way to carry your BBC micro. There is room provided to fit all the leads necessary behind the computer and manuals in the front.

Locks supplied with two keys. Price **£11** (£2 carr.)

DATA RECORDER

Top quality slimline portable cassette recorder designed specifically for use with home computers. Mains/Battery operated with tape counter.

£20

DATA CABLE to connect recorder to BBC **£2.00**

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Top grade tested C12 Data cassettes supplied in library cases **35p** each; 10 for **£3.20.**

CONNECTING LEADS

(All ready made and tested)

CASSETTE LEADS 7 pin DIN Plug	
to 5 pin DIN Plug + 1 Jack Plug	**£2.00**
to 3 pin DIN Plug + 1 Jack Plug	**£2.00**
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to 3 Jack Plugs	**£2.00**
6 pin DIN to 6 pin DIN Plug (RGB)	**£2.50**

DISC DRIVE POWER LEADS
Supply from BBC power supply to standard Disc Drive connector.
Single **£3.00** Dual **£3.75**

MISCELLANEOUS CONNECTORS

	Plugs	Sockets
RGB (6 PIN DIN)	30p	45p
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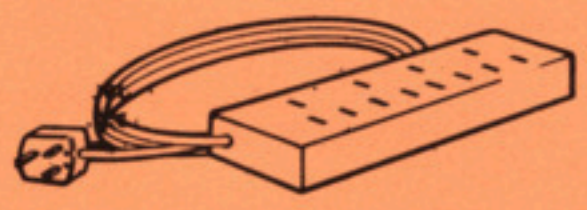
Cassette (7 pin DIN)	25p	65p
ECONET (5 pin DIN)	20p	30p
Paddles (15 pin 'D')	110p	215p
BBC Power Plug 6 way	80p	–
Disc Drive Plug 4 way	75p	–

4 WAY MAINS DISTRIBUTION SOCKET



4 way top quality mains trailing sockets.
Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals. Allows the whole system to be switched on from one plug.

£9.99

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Speech Chips, Manual and full fitting instructions

Only £19

28 pin ZIF SOCKET (Textool) **£6.95**

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6116LP-2K	**£2.75**	6264LP-8K	**£5.80**
8271	**£48**	ACORN DNFS	**£15**
ACORN OS 1.2	**£6**	ACORN BASIC 2	**£16**

SLEUTH ROM **£25** TOOLKIT ROM **£23**
BBC A to B Upgrade Kit **£45**

NEW LAUNCH

SPOIL-SPORT ROM

BANISH GAMES ... DEVELOP BRAINS
Is it that all too often your BBC Micro is being used to stage intagalatic war? Would you rather it was put to a better use?
The answer is now simple. Fit a WATFORD SPOIL-SPORT ROM.

It will:
- Stop machine code games being played on your BBC MICRO.
- Promote serious BASIC programming.
- Allow you to 'UNLOCK' your micro only with a preprogrammed password (in ROM).
- Interface with both disc or tape based micros.

This ROM is ideal for SCHOOLS, COLLEGES, etc.

Only £20

(Please specify password required when ordering.)

NEW LAUNCH

16K Sideways RAM Modules

The revolutionary design RAM Module you've been waiting for! Write and Read protectable, with optional battery backup. Works in a standard BBC micro or one with a ROM board.

Just look at the features:

- Compact construction.
- Fit multiple units with ease.
- No overloading problems.
- Free utilities software supplied on disc.
- Works with any ROM.
- Ideal for professional software development.
- Can be used as a 16k printer buffer as well.
- Load ROMs as needed – no messy unplugging, etc.

Introductory price: **£29**

Optional extras

BATTERY BACKUP **£3**
READ and WRITE protect Switches **£2**
(Supplied already fitted if ordered with the Module)

LOGOTRON LOGO

The popular Logotron Logo in ROM.
Recommended by most Education authorities.

Only: £55

Prices subject to change without notice and available on request.

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THE ULTIMATE DFSs FOR THE BBC MICRO

Adding disc drives to your BBC is probably one of the best ways of improving the power of your microcomputer system. Watford, with their reputation for providing quality products at an affordable price, have available a full range of disc drives and associated products, including:

o Disc Filing Systems
o Disc drives
o Disc covers
o Floppy discs
o Disc boxes
o Disc cases
o DFS Manuals
o Disc drive cleaning kits
o Disc based Software

Watford Electronics supply two highly sophisticated Disc Filing Systems specially designed to be fully entry point compatible with Acorn's standard DFS. As well as this, these two DFSs provide significant and powerful enhancements to allow the user greater ease in acomplishing a given task.

Many people who are about to buy a DFS find themselves wondering which one to opt for: should they buy the standard Acorn one and restrict their available features, or should they buy one of the other DFSs and find themselves running into compatibility problems if they opt for the wrong one? Before you look below to see the vast range of extra features that our DFSs provide, may we just point out that our DFSs are fully Acorn compatible; not just partially, like some of the 'competition'. We have been supplying DFSs for two years now with many thousands of satisfied users. Also, please note that the Watford DFS is supplied by a reputable firm via proper mail order and shop premises.

Just compare the features:

Features	Acorn	Watford	
	1.20	Single Density	Double Density
Max nos. of files per disc side	31	62	62
Max disc capacity	800k	800k	1440k
Tube compatible	Yes	Yes	Yes
Built-in Editor	No	Yes	Yes
Built-in Formatter	No	Yes	Yes
Built-in Verifier	No	Yes	Yes
MRUN a file	No	Yes	Yes
MLOAD a file	No	Yes	Yes
Extended RENAME	No	Yes	Yes
Selective COPY	No	Yes	Yes
Default file name	No	Yes	Yes
Disc space distribution	No	Yes	Yes
40/80 Software Switchable	No	Yes	Yes
Wide catalogue	No	Yes	Yes
Close open files	No	Yes	Yes
Improved OPENOUT	No	Yes	Yes
Copy between densities	N/A	N/A	Yes
OSWORD &7F	Yes	Yes	Yes
Full entry point compatibility	Yes	Yes	Yes
Retain information over a break	1.20	1.42	1.52
	partial	Yes	Yes
Games compatibilty	Yes	Yes	Most
Econet file server	Yes	Yes	Yes
Econet station	Yes	Yes	Yes
Full wildcard facilities	No	Yes	Yes

Note that whilst BOTH of our DFSs are compatible with the 6502 and Z80 Second Processors, the Acorn DNFS ROM (supplied by Acorn with the processors) should be present within the machine for the Tube transfer protocol. Our single density DFS is compatible with the Torch Z80 system. With the current versions of our DFS and DDFS, 'PAGE' will remain unaltered by the presence of a DNFS ROM; i.e. the normal value of &1900 is retained.

THE WATFORD DFSs

Desgined to offer power and flexibility, the two versions of our DFS are packed with features such as:-

o Acorn's slightly antiquated DFS allows a maximum of only 31 files per side of a disc. Our DFSs cater for either 31 or 62 files per side of a disc. In 62 catalogue mode, all these files are available and displayed as one continuous catalogue; not a collection of small catalogues that require extra effort on the part of the user to swap between. We have found that 62 files is adequate in normal use (more would require altering 'PAGE', which is undesirable - again this is due to the way in which the BBC micro is organised).

o Built into each Watford DFSs are the disc Formatter, Verifier and Sector Editor that are so useful and essential for the operation of a DFS. We do not ask you to pay extra for these features with our DFSs - they should always be present within a perfect DFS and therefore included in the price.

o One of the excellent features of the BBC is its 80 column mode of operation. Acorn's DFS, unfortunately, only displays in 40 columns even in these 80 column modes; ours displays the catalogue correctly in 4 columns. This feature has now been extended to include the 80 column display of the filing system information at the top of the catalouge as well.

o When working on a program, most 'load and save' operations to the disc will use the same filename (ie that of the current program). To save typing, and minimise errors, our DFS has a novel feature whereby a 'default' filename can be entered. Once this is done, the usage of a null filename will cause this previously entered filename to be used.
o Catalogues produced on the screen by our 'Ultimate' DFS include extra information to say how many files are present within the catalogue, whether the catalogue is 31 or 62 files in size, how many tracks are on the disc, and whether the double stepping mode is active, etc.

o Due to the way that Acorn decided files should be stored, there is occasionally a need to 'compact' the available spaces on the disc. As this can alter the contents of memory, we decided that it would be useful to implement a command that informs the user whether compaction is necessary, and if it will actually result in any significant gains.

o One standard requirement of a filing system is to be able to rename files. Acorn's simple DFS only allows for one named file to be changed to another named file. Our 'Ultimate' DFS allows for groups of files to be renamed. For instance:

```
*RENAME *BERT* *FRED*
```

will take all the files that have BERT in their name, and change the BERT to FRED.

o The OPENOUT command on both versions of the Watford DFS has been improved so that it automatically selects the largest available space on the disc; thus minimising the frequency of the Can't extend error messages.

o Both of our DFSs feature, as standard, the ability to make a normal 80 track disc drive read and write 40 track discs. This is normally accomplished by an expensive manual switching unit on the drives; our DFS does this as standard.

o The software switching aspect of our DFS and DDFS is far more flexible than a standard siitchable drive. The reason for this is quite simple: a switchable drive means that both sides of the disc are either 40 OR 80; you cannot have 40 track on one side and 80 track on the other side with a standard switchable disc drive. The Watford DFSs are fully independant, and thus far more powerful. With the DDFS, both the density and the 40/80 aspect are independant; thus offering incredible flexibility.

There are many other features of the Watford DFS too numerous to mention, but all well documented in the excellent DFS manual sold separately.

WATFORD'S SINGLE DENSITY DFS

This popular and widely acclaimed DFS has now been available for two years, and has gained a large following amongst serious users of the BBC micro. Owners of Acorn's standard DFS can upgrade to our 'Ultimate' DFS merely by replacing their DFS ROM. See elsewhere in this leaflet for the price of this upgrade.

WATFORD'S DOUBLE DENSITY DFS

The DDFS from Watford Electronics represents a new standard in DFSs for the BBC micro. This is a double density version of our popular single density DFS, and combines all the features of this powerful DFS with the advantages of a system that gives 80% more storage per disc in double density mode. P.S. - Please note that not all DDFSs are capable of providing either the full 80% storage increase, or of allowing a file the full size of the disc - Ours allows both of these!

The Watford Electronics DDFS will operate with discs formatted in either single or double density: the density is automatically sensed on an access to the disc and this is then remembered for future accesses. The built-in formatter prompts for the density when a disc is formatted, allowing the user to select the density of his own discs.

The typical piece of games software these days is provided upon a protected disc. In order to work on any double density system (including the others on the market) a protected piece of software needs to make calls through the OSWORD &7F routines. To ensure compatibility, the Watford DDFS features probably the most comprehensive and powerful 8271 emulation ever written for a double density system.

THE VIDEO DIGITISER

The video digitiser turns video pictures into graphics screens on your BBC micro. It takes in a standard video signal, as provided by a video camera or video recorder. This signal is then converted into a digital signal which can be fed to the computer. Special software in the BBC is then used to present this information on the screen. To put it very simply, if you connect a video camera to the digitiser then the pictures will appear on the BBC's monitor.

Why would you want to do this? After all you could just connect the camera straight to the monitor. The point is that once the image is on the BBC's screen the full power of the computer can be used to process the image in various ways. It can be used to provide printed copies of favourite video images, any picture can be printed from recorded video tape or direct from a video camera. With the advent of satellite pictures Image Processing has become a major mathematical field. You too can experiment with these advanced techniques on your own pictures.

The software includes a facility for the transfer of video pictures to the AMX Mouse system, for sophisticated editing of the image. The possibilities for modification of real images could be a new art form.

Sophisticated printer dump routines are included for use with Epson compatible and Olivetti Sparkjet printers. These routines have been specially written to produce an evenly toned dump to match the original picture. If your printer is of a different type, don't worry, you can use any screen dump on the displayed image.

The Video Digitiser is supplied complete with a detailed manual giving examples of use together with trouble-shooting information to enable you to obtain the best possible pictures from the system.

Input Requirements: 1v Peak to Peak composite video signal, colour or monochrome. A standard BNC connector is provided (as on the back of the BBC micro). This signal can be provided by a standard video camera or the direct video out from a video recorder. Some televisions also provide a suitable direct video output. The digitiser is fully compatible with video cameras designed for use with video recorders, though these cameras will normally need to be connected to a video recorder as well for their power supply. Professional cameras, those designed for surveillance etc.etc. may all be used.

Connection to BBC Micro: Ribbon cable to User Port, this is used to power the unit and to transfer the data.

Controls on the digitiser: Switch to select display mode and LED to indicate presence of a video signal. Knobs to control manual black and white level, switch to select automatic level control.

Power consumption: At less than 300 mA the digitiser puts a small load on the BBC's power supply.

Supplied Software: ROM to fit in the computer giving facilities for dowloading screens, printing screens and conversion to AMX Mouse system

Display: The image can be produced in modes 0, 1 and 2. In each mode the full available grey scale will be used, i.e. up to 8 grey levels in mode 2, 4 in mode 1 and 2 in mode 0. To obtain maximum resolution the levels of black and white may be adjusted to suit the video source. Resolution of the digitiser is fine enough to match the full resolution of mode 0. The input can be negated as it is read, giving the effect of a photographic negative.

Disc storage: A sophisticated screen compression system is provided. This will save precious disc space whilst preserving the finest detail. On simple images the disc file can be 20 times smaller than the actual screen memory, there are considerable savings even on complex pictures.

Scan speed: A single scan of the display takes 1.6 seconds.

Printing Facility: Built in screen dumps will work with Epson FX-80 compatible and Acorn/Olivetti Sparkjet printers. The required Aspect Ratio may be set to match the camera accurately to the printer so that pictures are printed with the correct proportions. These dump routines have been optimised to produce an accurate grey scale, other screen dump routines can be used but will not look quite as realistic.

TRANSFEROM

This utility ROM is designed to transfer cassette based programs to disc. If you have many programs already on tape, transferring all of these to disc can be a daunting and difficult task. Transferom exists to simplify this process, making it largely automatic.

Programs are stored on discs specially formatted by Transferom for its use. These discs are created by you, and there is no limitation on the number produced. Previous programs of this type were supplied on a disc, once this disc was full you had to buy the software all over again. With Transferom this problem is removed - you can make as many discs as you need.

The system is entirely menu driven and is extremely easy to use. You do not need any specialised knowledge to transfer even extremely complex multipart programs to disc. It automatically copes with locked files and will transfer long adventure programs.

Transferom will work with both Watford Electronics and Acorn single density DFSs, and with the Watford Electronics Double Density DDFS. Please note that it will NOT work with any other make of double density system.

Discs to be used by the system must be specially formatted by the ROM. As a consequence of this they cannot be copied with the *BACKUP command. Any number of discs can be made. The discs will only function if the ROM is also present in the machine.

The games on a disc are automatically presented in a menu. Names are up to 14 characters long, with a 30 character index title.

Discs must initially be formatted as 31 file single density, whatever the DFS they are to be used under.

Due to the sophisticated and complex programming necessary for this program it will only function correctly if fitted to the highest priority ROM socket.

Transferom is supplied with a detailed manual explaining all the available facilities.

It is vital that you specify whether you have a single or double density disc system when you order. Due to the different hardware in the machine different versions of the ROM must be used.

ROMAS

ROMAS is a sophisticated and powerful professional development system for machine code programs.

The package can assemble code for many different processors, all from the one program. You only need to learn one editor and filing system to create code for a whole range of machines. The advantages of this are obvious, all your writing will be performed on one machine which will save you time and money.

There has been no skimping on assembler facilities to achieve this either. ROMAS has all the features of the BBC micro's own assembler presented in a 'professional' format.

The following processors are supported: 6502, 6511, 8085, Z8, Z80, 6809, 65C02, 8041, 8048

Note that the Mos Technology mnemonics are used for the 6502 and 6511 e.g. LDA #1 rather than the Rockwell mnemnics e.g. LDAIM 1.

There is a very powerful editor built in to the system. This has been written specifically for the creation of assembler source. It will normally be used in its full screen mode, however its power is realised when the command line based macro system is brought into play for more complex manipulations.

Assembly is from disc to disc to allow very long programs to be assembled. The package allows for source files to be chained together so that source can be kept in small modules.

The manual supplied is an extremely detailed reference to the assembler and editor. It describes briefly the differences for all the processors. It is not, however, a beginners guide to assembler programming. You will also need programming guides for the processors you intend to write for. All standard mnemonics are supported for each processor as well as many assembler directives.

The main part of the assembler is the same for all processors. Overlays are used for each different processor. 3 Overlays are provided in the ROM, the rest are supplied on disk:

On ROM: 6502, 6511, 8085
Disk overlay: Z8, Z80, 6809, 65C02, 8041, 8048

A full set of assembler directives are provided, these include the following: Facilities for defining bytes using expressions, single characters, strings and words together with a facility for reserving space. Conditional assembly is provided with an optional ELSE clause. Output formatting control can be used to alter standard page lengths etc. File chaining allows long programs. Values may be read as the program is assembled.

The expression handling facilities are also extremely powerful. Symbols defined by directives and as labels can be used in expressions. Numbers may be entered in binary, octal, decimal and hex. Operations allowed include +-*/ together with specialist logical operators for and, or and exclusive or, logical shifts left and right by any number of bits and two extremely useful functions to return the high and low halves of a 16 bit number. Calculations are performed in strict algebraic order so that for instance 1+2*3 returns 7, inferior assemblers return 9 which is mathematically incorrect.

The output from the assembler is in a special hex format. Facilities are built in to the ROM to bring this file into the BBC's memory, convert it to standard Intel Hex format, or serd it down the RS423 interface. These facilities offer maximum flexibility for reliable transfer of the data to other machines and to professional Eprom programmers.

You may use any editor to create source files for the system. Provided with it, however, is a very sophisticated editor optimised for this sort of programming. It features normal full screen editing facilities for program entry and simple editing. For more complex manipulations a command line based system is provided. This supports macros and iterative programming to give maximum flexibility in manipulation of the text. Global and selective search and replacement with wildcards etc. are provided. The editor will work in modes 0, 1, 3, 4, 6 and 7 and has horizontal scrolling to allow lines upto 250 characters.

DIAGNOSTICS DISC

The diagnostics disc provides a package of routines to test all the facilities of a BBC model B with DFS. By running through all the tests provided the user can be assured that their machine is in working order.

Each part of the machine is subjected to a thorough test one by one. Working through the manual will result in these tests being done in a structured manner to ensure that nothing is missed. When a test fails the manual indicates where faults will lay, and what you may do to fix them.

The disc cannot, of course, repair a faulty machine. Its aim is to provide you with a clear picture of anything that is wrong with it, or to give you confidence that the machine is, in fact, in perfect working order. The results of these tests could be of considerable help to professional service engineers, if you are not able to repair faults yourself.

We do not encourage inexperienced users to tamper with the workings of the computer, possibly resulting in expensive damage. Wherever possible hints are given on common faults and how those experienced in repairing complex circuit boards can make a repair.

The Diagnostics disc tests the following components:

All Ram, the O.S., sideways ROMs, the Keyboard, sideways Ram, Video output, User Port, Sound system, Acorn Speech synthesiser, Analogue port, Cassette interface, RS423 interface, Joysticks, Disc Interface, Printer Port, 2nd Processors.

It is of course necessary for the disc interface to be at least partially working for the disc to boot. Initial Ram tests are performed to ensure that the memory used for the test program is working correctly.

The manual takes the user through all the tests in great detail. To keep the program as short as possible the manual contains all information on possible faults and cures. It consists of over 60 pages, packed full of useful information and hints.

Users of this package should note that removing the lid of the computer may invalidate their warranty. Any repair work carried out by the user will certainly invalidate the warranty. If your machine is still under guarantee the diagnostics disc may be used to isolate faults which can then be repaired by an approved service centre. For those competent to perform their own repairs, Watford Electronics stocks most IC's and parts used in the BBC micro.

DUMPOUT 3

DUMPOUT 3 must be the most sophisticated screen dump ROM available for the BBC micro. Using very simple commands your graphics displays can be enlarged, rotated, shrunk and be printed in sections. Its full facilities are available on all the supported printers.

DUMPOUT 3 will dump ANY screen mode. This includes Mode 7 graphics and even Mode 8 (as created by Graphics ROM or the program in the Advanced User Guide). All characters and graphics displayed in any mode will be accurately reproduced. It will dump to most dot matrix printers. Check your printer against the following list:

Shinwa CTI CP80
Seikosha GP80/100/250
Canon 1080/1156
Star SG10
Kaga/Taxan KP810/910
Nec PC8023
Gemini 10X
Epson MX/RX/FX
Tandy LPVII, DMP100/120/200/400

If your dot matrix printer isn't in this list, or isn't compatible with one of these printers, then isn't it time you bought a new printer?

Dumps are produced in grey scale. Grey levels are assigned to each colour displayed. You may print either the phsyical (displayed) colours, or the logical colours which were plotted. There is also a facility to mask out certain colours so that only parts of the picture are reproduced. For maximum resolution a two tone dump can be used

Dumps may be of any size and of any part of the screen. Two parameters are given to specify vertical and horizontal size, these two byte numbers allow you to print pictures ranging from the minute to the enormous. You may also position the dump where you wish on the paper. The picture may be rotated by 0, 90, 180 or 270 degrees.

In mode 7 there are special contrast expansion facilities to make text stand out more clearly. Also included are extra OSWORD calls to allow plotting and reading of points in mode 7.

Also include is a key triggering facility for use within other programs. Once this has been set up you can load another program and dump its screen displays with a simple keypress. If a keyswitch (not supplied) is added to the user port then this may also be used to trigger the production of a dump.

Facilities are included for displaying and changing both the text and graphics windows. This facility works in all modes, even mode 7! All these facilities and more are explained in the detailed manual supplied with the ROM.

Some comments from the independent press:

The Micro User Feb.1985
"Without reservation I wholeheartedly recommend the Dump Out 3 ROM as the ultimate screen dump facility for the BBC micro. It is easy to use yet highly versatile, and caters for all BBC screen modes in multitone high resolution printing. Whole, partial, rotated and scaled screens may be dumped to almost any BBC compatible dot matrix printer. At £24 it must represent excellent value for money and surely cannot be beaten"

Practical Electronics May 1985
"an extremely sophisticated and powerful dump utility"

NLQ DESIGNER ROM

We are pleased to be able to bring you details of the NLQ Designer ROM, available only from Watford Electronics. With this advanced ROM for the BBC Micro it is possible to stretch the Near Letter Quality (NLQ) printing of your Kaga Taxan (or compatible) printer to its limits. Anyone who has studied the handbook that comes with this flexible printer will no doubt be aware of the ability to define an alternate NLQ font. With the NLQ Designer you can create any number of different NLQ fonts to suit your individual needs, whether you are a mathematician or an author. Once designed, these new fonts can either be blown into a ROM for plugging directly into your printer, or downloaded into a RAM chip within your printer for immediate use.

A variety of different preprogrammed fonts are already available from ourselves, with more to follow. These fonts can be supplied either on ROM or as a disc file.

The NLQ Designer is supplied with 3 fonts on disc; these are the Bold, Courier and Gothic fonts. The NLQ Designer package, which includes the ROM, these three fonts on disc and a comprehensive manual costs only #25 + VAT (#1.50 + VAT P&P). Individual fonts can be supplied on disc for the initial cost of #6.50 + VAT for the first font, with each subsequent font costing #5.00 + VAT. If you require six or more extra fonts, then there is the special price of #25 + VAT for these on disc. Please state 40 or 80 track discs when ordering.

Each font is also available ready blown in ROM for direct fitting into the Kaga at #15 + VAT. Only one of these may be fitted at once. Please note that downloaded fonts require the presence of a 6264 RAM chip inside your Kaga (this is otherwise known as the PCG RAM kit), which is also available from ourselves. Carriage on any of the above items is

#1.50 + VAT.

The ability to download a new NLQ font into a Kaga or Canon printer is provided via the addition of a 6264 RAM chip. These RAM chips are the same as used by most sideways ROM boards currently available and may be readily purchased from ourselves (latest price elsewhere in this pamphlet). Details on the simple alterations necessary to your printer are provided in the NLQ Designer Manual.

We also have available a leaflet showing the various fonts available.

We are sure you will agree that the NLQ Designer ROM will give your letters and documents a professional finish not previously possible on the BBC micro. The necessary commands are very simple and easily remembered. We also include a facility for printing your company logo using an 8 by 3 character shape, also easily accessed within from Wordwise Plus.

ROM/RAM BOARD

We, at Watford Electronics, have been producing high quality hardware and software products for the BBC for three years now. Having carefully observed the needs of our customers we set our top hardware engineer the task of producing the ultimate ROM board to meet all your ROM/RAM requirements.

After weeks of top secret development we are now able to bring you more details of this, the ultimate in ROM/RAM boards.

- o No overheating problems
- o No User Port corruption
- o Full buffering
- o NO SOLDERING
- o No flying leads
- o Firmly mounted
- o Easy fitting
- o Up to 8 banks of 16k of Dynamic RAM
- o One bank of 16k CMOS Static RAM allowed
- o All RAM has Write protect
- o CMOS RAM has Read protect
- o CMOS RAM can have battery backup
- o Special RAM write register
- o Can run any BBC ROM
- o FREE utilities disc
- o Compatible with DDFS boards
- o Compatible with our 32k RAM Card
- o Compatible with our Sideways ZIF
- o Large printer buffer (up to 128k)
- o High speed disc backup via RAM

Obviously, so much RAM requires some powerful facilities to use. To show you just how powerful the features our board offers are, and to convince you that the competition if any, is just simply not worth buying, we shall provide some more details on the advanced features offered.

Each socket has write protection to allow all ROM based software to be run. Also, to help during software development, the CMOS RAM socket is equipped with a special read protect facility (this allows recovery from ROM crashes).

Up to 8 ROMs and 8 banks (each of 16k) of RAM may be used, or one of the ROMs may be configured to give 16k of battery backed CMOS Static RAM.

The RAM socket selection (which is independant of the normal ROM socket) is performed by a special register at &FF30. In normal systems, a 'write' to this location would have no effect. We believe that there is available an inferior board in which, for some totally unexplained reason, the User Port (as used by the AMX Mouse, Eprom Programmers, etc.) is used for the selection. Obviously this was not a very sensible move on the part this manufacturer.

The ROM/RAM card from Watford represents second generation ROM board technology and is a must for all serious users of the BBC micro.

16K RAM MODULES

The revolutionary design RAM Module you've been waiting for! Write and Read protectable, with optional battery backup. Works in a standard BBC micro or one with a ROM board.

Just look at the features:

- o Compact construction
- o Fit multiple units with ease
- o No overloading problems
- o Free utilties software supplied on disc
- o Works with any ROM
- o Ideal for professional software development
- o Can be used as a 16k printer buffer as well
- o Load ROMs as needed - no messy unplugging, etc.

SEIKOSHA SP-800

This new attractively finished dot matrix printer features Near Letter Quality mode and is unsurpassed at the price. Provides high quality printout for word-processing, whilst retaining a fast mode (80 CPS) for draft copies. Other features include a variety of character sets, underlining, bold print & double strike, bi-directional logic seek, automatic paper loading, variable paper width etc. Friction Feed; Tractor feed optional extra. SP800 makes available the facilities of much more sophisticated printers at a very reasonable price.

EPSON LX-80

EPSON's new Low cost High performance printer. Print speed 100 cps, NLQ mode 22 cps. 9 needle print head. Full FX-80 capability is supported with downloadable fonts. Friction feed is supplied as standard, with tractor feed and an attactive auto sheet feeder available as extras.
NLQ Mode and current typeface selectable from front panel. This attractive 'HiTech' design printer also features some powerful word processing functions built in, e.g. can auto justify a line of text sent to it.

FIDELITY COLOUR MONITOR

o Medium Resolution, attractively finished,
14" RGB & Composite VIDEO/AUDIO Input.

Has a detachable anti-glare screen.
Supplied complete with cables.

YOUR ONE STOP SHOP

MICROS
HARDWARE
SOFTWARE
PERIPHERALS
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COMPONENTS

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